



# PROCESS PLANT ENGINEERING RETHOUGHT

For sustainable productivity

### **C<sub>3</sub>-SPLITTER**

**Customer:** PCK Raffinerie GmbH

**Location:** Schwedt, Germany

**Project:** FCC Overcracking Plant

- Production of gas, LPG, gasoline and diesel
- FCC main column with gas concentration unit, LPG purification and separation
- C<sub>3</sub> splitter to produce propylene of polymer-grade quality
- Tallest building at the refinery having a total height of 84 m and a column diameter of 5.2 m



As a specialist in renewable energies and with proprietary sustainable technologies both in construction of new and refurbishment of existing plants as well as with its high level of process competence EDL has become an important part of the Pörner Group. When it comes to larger, international projects our companies complement each other. The synergies resulting from this are beneficial for our customers and contribute substantially to the Group's success.

Peter Schlossnikel and Andreas Pörner, Managing partners of the Pörner Group

# PROCESS PLANT ENGINEERING RETHOUGHT

## Inspiring technologies for the energy transition

Climate neutrality, renewable energies and long-term growth are just some of the challenges of our time. We need sustainable energy and economic cycles to secure our future and that of future generations.

We as EDL face these challenges and as medium-sized plant engineering company provide innovative and custom-tailored solutions. With our process know-how, we help our customers to successfully implement their projects and thus ensure greater profitability and sustainability.

Since our company was founded more than 30 years ago as a subsidiary of Edeleanu, we have earned an excellent reputation in the refinery and chemical sectors by professional competence and reliability as well as

creativity and flexibility and have developed into one of the leading technology-oriented plant engineering companies in Germany.

We serve the domestic and foreign industry with a high level of process expertise and long years' experience, both as technology provider and conventional plant engineering firm in all phases of the project business.

Since 2003 we have been an integral part of the Austrian Pörner Group based in Vienna.



Based on our pioneering technologies and our high professional competence  
we shape the future together with our customers.

Dr. Michael Haid, Wolfgang Kursch, Daniel Oryan, Managing Directors of EDL Anlagenbau Gesellschaft mbH

## VACUUM DISTILLATION

**Customer:** PCK Raffinerie GmbH

**Location:** Schwedt, Germany

- Project:**
- Replacement of vacuum column
  - Improvement of energy efficiency of vacuum distillation unit
  - Conversion to modern deep-cut operation



In the upcoming transformations, it is our ambition to be a competent consultant and implementation partner of leading energy and production companies.

Wolfgang Kursch, Managing Director



## MISSION UND VISION

It is visions that take us forward.

**We as EDL set standards in plant engineering when it comes to quality, technologies, service and safety.**

We fascinate our customers with innovative solutions and custom-tailored planning and design: from new plants through to modernization of existing plants with demanding engineering services. In doing so we capitalize on decades of experience and, to the extent possible we use standardized modular systems and solutions.

Our relations to customers, business partners and employees are based on reliability and responsibility, and constant improvement is what we want to achieve.

Excellent technologies and outstanding services are means to create sustainable values for our customers thus securing their market leadership in the long run.

## PROPANE DEASPHALTING

**Customer:** H&R Ölwerke Schindler GmbH

**Location:** Hamburg, Germany

- Project:**
- Construction of propane deasphalting plant (PDA)
  - Production of deasphalted oil from vacuum residue by liquid-liquid extraction
  - Solvent used: propane



We listen carefully. We watch closely – and put ourselves in the position of our customers in order to find the optimum solution.

Peter Sonntag, Director Sales & Contracting



## INNOVATION MEETS EXPERIENCE

We combine tradition and innovation.

The beginnings of our company go back to Dr. Lazăr Edeleanu who founded in Berlin in 1910 a company to market his process of selective extraction of aromatic compounds by liquid sulfur dioxide.

In 1930, the company was renamed Edeleanu GmbH. Several changes of ownership followed. In 1991, the Edeleanu GmbH Leipzig (EDL) was finally founded as a subsidiary of Edeleanu GmbH with employees from the former Chemieanlagenbaukombinat Leipzig-Grimma (CLG).

In 2003, EDL became EDL Anlagenbau Gesellschaft mbH and part of the Pörner Group.

For decades liquid extraction processes and advanced process technologies have been one of our core competences.

**We have gained the trust of leading customers in the industry by first-class solutions and plants in the following sectors:**

- Oil & gas
- Lubricants & waxes
- Petrochemicals
- Chemicals
- Renewable energy & specialities.

## ISO C<sub>4</sub>

**Customer:** OMV Deutschland Operations GmbH & Co. KG

**Location:** Burghausen, Germany

- Project:**
- Production of high-purity isobutene from feedstock of the metathesis plant, installation of storage tanks and tank car loading
  - Savings of 20,000 t of CO<sub>2</sub> emissions per year by integration of the new Iso C<sub>4</sub> plant in the existing metathesis plant
  - Worldwide first implementation of a novel technology developed by BASF and OMV



Our process competence builds on excellent skills and long years' experience of our process engineers and forms the basis of successful project work.

Jan Schwartze, Director Technology



## PROCESS COMPETENCE

In process engineering we lay the foundation for putting customer technologies, processes from renowned licensors and proprietary technologies successfully into practice.

Our process specialists develop complex solutions tailored exactly to the framework conditions, requirements and wishes of customers.

As a trusting and independent consultant we provide advice and assistance to our customers in the important project start-up phase concerning all questions of concept development, selection and procurement of own and third-party technologies. It requires knowledge and expertise which we have gained over many years of engineering, complex process simulations and process designs.

Oil & gas	Lubricants & waxes	Petrochemicals	Chemicals	Renewable energy & specialities
<ul style="list-style-type: none"> <li>▪ Atmospheric &amp; vacuum distillation</li> <li>▪ FCC/HC/Visbreaker/Coker/POX</li> <li>▪ Extraction</li> <li>▪ Desulphurization</li> <li>▪ Hydrotreating</li> <li>▪ Alkylation</li> <li>▪ Isomerization</li> <li>▪ Aromatics</li> <li>▪ Fischer-Tropsch synthesis</li> <li>▪ Methanol</li> <li>▪ Amine treating &amp; acid gas removal</li> <li>▪ Gas processing</li> </ul>	<ul style="list-style-type: none"> <li>▪ Vacuum distillation</li> <li>▪ Deasphalting</li> <li>▪ Extraction/TDAE/TRAE</li> <li>▪ Dewaxing</li> <li>▪ Deoiling</li> <li>▪ Hydrotreating</li> <li>▪ Hydrofinishing</li> <li>▪ Complex greases</li> <li>▪ Wax packing</li> <li>▪ Depolymerisation</li> <li>▪ Used oil re-refining</li> </ul>	<ul style="list-style-type: none"> <li>▪ Butadiene</li> <li>▪ Propylene</li> <li>▪ Phenol</li> <li>▪ Aromatics/BTX</li> <li>▪ Aromatics extraction</li> </ul>	<ul style="list-style-type: none"> <li>▪ Epoxy resins</li> <li>▪ Bisphenols</li> <li>▪ Ether/Glycidyl ether</li> <li>▪ Cyclohexanone</li> <li>▪ Trichlorsilane</li> <li>▪ Multi-purpose distillation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Power-to-X/ Biomass-to-X</li> <li>▪ Direct Air Capture</li> <li>▪ Carbon Capture &amp; Utilization</li> <li>▪ Plastics recycling</li> <li>▪ Infrastructure</li> </ul>



#### **SDA PLUS TEST STAND**

The necessary process parameters and optimal process conditions are determined at own pilot plants on the basis of customers', process and product requirements.



We assist our customers in using valuable raw materials in an optimal manner for the manufacture of long-lasting products.

Jan Schwartze, Director Technology

**SDA PLUS**  
EDL•TECHNOLOGY

**DEWAXING**  
EDL•TECHNOLOGY

**DEOILING**  
EDL•TECHNOLOGY

**LEPD**  
EDL•TECHNOLOGY

**AROMEX**  
EDL•TECHNOLOGY



## EDL TECHNOLOGY PORTFOLIO

Inspiring technologies by EDL

The constant improvement of our technological know-how and the development of proprietary technologies is an investment in the future not only for our own company but primarily for our customers as plant operators.

The focus of our process activities is on an improved and in particular sustainable processing of heavy refinery residues and used oils.

Equally being in the centre of attention is the manufacture of climate-neutral fuels and base chemicals on the basis of resource-saving processes meeting all current safety and environmental standards.

Highly specialized and committed engineers pool their wealth of technological know-how and long years' experience in plant engineering. Added to the potential is a broad spectrum of advanced software ensuring an efficient outcome of high quality.

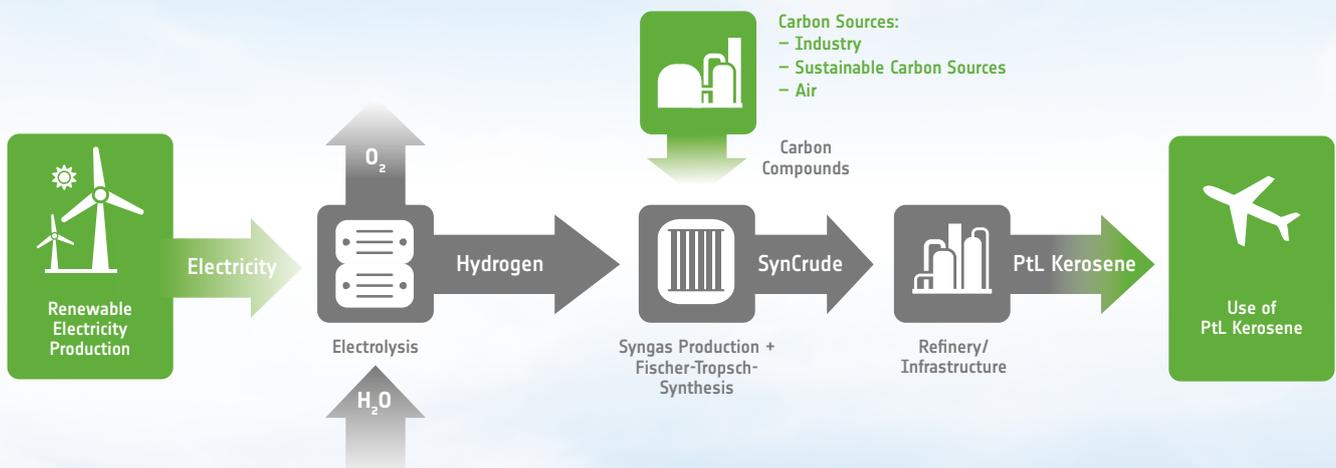
### Our technologies in the areas of

- Solvent deasphalting
- Solvent extraction
- Dewaxing
- Deoiling
- LEPD
- BTX aromatics extraction

facilitate the production of a variety of premium products, such as environmentally friendly tender oils (TDAE, TRAE) or de-oiled waxes, and largely contribute to our customers' competitiveness.

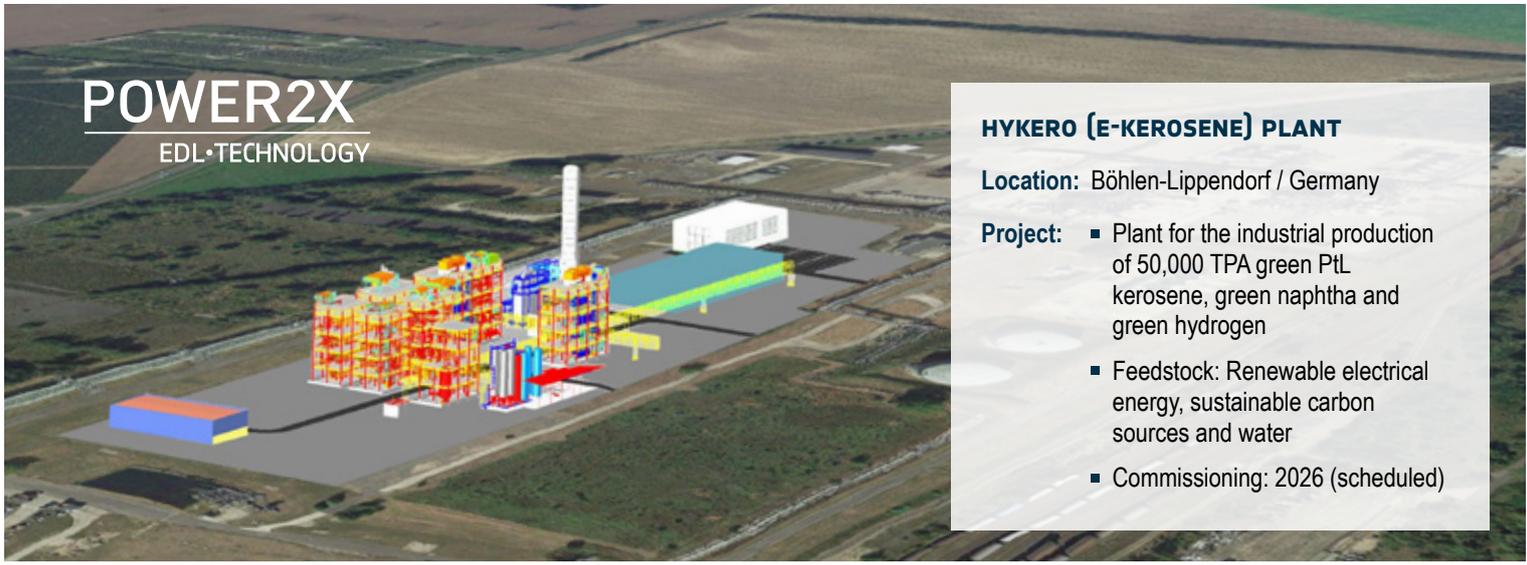
# POWER2X

EDL • TECHNOLOGY



Our environmentally friendly power-to-X-/biomass-to-X solutions make a major contribution towards reducing greenhouse gas emissions.

Dr. Aleš Bulc, Senior Project Manager



**HYKERO (E-KEROSENE) PLANT**

**Location:** Böhlen-Lippendorf / Germany

- Project:**
- Plant for the industrial production of 50,000 TPA green PtL kerosene, green naphtha and green hydrogen
  - Feedstock: Renewable electrical energy, sustainable carbon sources and water
  - Commissioning: 2026 (scheduled)

## **FUTURE-ORIENTED PTX SOLUTIONS**

**With creativity, long years' experience and great enthusiasm for innovations we develop and market trendsetting technologies.**

Green hydrogen generated from water and renewable electricity in an electrolysis facility is considered an important part of the energy transition and will also be used in the future to produce so-called efuels, i.e. fuels based on renewable power. They are used in particular in the aviation industry, since there are no alternatives to liquid fuels that can be implemented on a large scale in the foreseeable future.

As technology-oriented company and system integrator combined with decades of experience in plant engineer-

ing we have developed industrial solutions for the generation of power-based Sustainable Aviation Fuel (SAF), also known as Power-to-Liquid (PtL) kerosene.

**Quality features include:**

- industrial operational safety
- superior CO<sub>2</sub> efficiency
- full scalability
- standard-compliant, high-quality SAF products.

These are achieved not least by the integration of processes from world leading system partners into EDL technologies.



**With sophisticated technologies, systems, optimized investment and operating costs we provide our customers with sustainable, advanced fuels and base chemicals that show excellent GHG emission reduction rates, and create green solutions to significantly reduce the carbon footprint.**

## USED OIL RE-REFINING

**Customer:** Puralube GmbH

**Location:** Tröglitz, Germany

**Project:**

- Technological quantum leap: world's first production of base oils API Group III from used oils
- Expansion of the HyLube2 plant by a new process stage engineered by EDL in due time and within the stipulated budget

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The processes applied in the industrial production of base oils from used oils set new standards in terms of energy savings and CO<sub>2</sub> emission prevention.





## COMMITTED TO MORE SUSTAINABILITY

We take responsibility for the sustainability of our activities.

Sustainability means for us to think about tomorrow today and safeguard the basis of existence of future generations which includes, for example, the conservation of limited resources and responsible conduct towards fellow humans at all levels. Our organizational structures and processes are reviewed regularly to ensure sustainability.

Our novel, climate-friendly technologies and innovative solutions, for example, make a valuable contribution to the reduction of CO<sub>2</sub> emissions and help to adapt to the effects of climate change (goals 9, 12 and 13 of the Agenda 2030 of the United Nations).





**All services for new plants and plant modernization from one source with professional project management at all stages**

**Studies & Project Development**

- Value engineering
- Conceptual design
- Process optimization
- Energy & safety-related optimizations
- Risk assessment
- Cost-effectiveness analysis
- Plant evaluation
- O&M philosophies
- Project financing
- Pilot testing

**Basic Engineering & FEED**

- Basic engineering/FEED
- Process simulation (steady state/dynamic)
- PINCH analysis
- Fired heater analysis
- Flare network calculation
- HAZID/HAZOP
- Authority engineering
- Cost estimation

**Detail Engineering & Procurement**

- FEED check
- Detail engineering
- Constructability review/4-D analysis
- Procurement
- Shipping & forwarding
- Material management
- Expediting & Inspection
- Cost & schedule control

**Construction & Commissioning**

- Construction supervision
- Subcontractor management
- Quality control
- Cost & schedule control
- Training
- Pre-commissioning & commissioning
- Start-up preparation & support



# FROM STUDIES THROUGH TO EPCM/EPC SOLUTIONS

## Maximum flexibility for optimal solutions

Each process plant is unique and has its own complexity and specific requirements. Technical and commercial processes have to be planned and coordinated in an exact manner.

Our performance portfolio enables us to cater to the specific needs of our customers and their project requirements.

With our engineering services in all disciplines of plant engineering and advanced tools we create the best solutions for our customers.

### Engineering from a single source

- of high quality
- on schedule
- resource-saving
- cost-efficient



From consulting service, conceptual design, planning and procurement through to construction and commissioning we provide a full service package custom-tailored to the requirements and state-of-the-art.

Thomas Wolf, Director Engineering

## PCK SHUTDOWN „KLEINER 16“

**Customer:** PCK Raffinerie GmbH

**Location:** Schwedt/Oder, Germany

**Project:** Execution of 4 projects in parallel during complex shutdown of the refinery in 2016:

1. Crude oil 1 plant: Revamp of vacuum section with new vacuum column
2. Crude oil 1 plant: Revamp of stripper section with new stripping column
3. FCC plant: Revamp of regenerator section with new regenerator
4. FCC plant: Revamp of LCO recovery

- Project execution meeting the quality standards, deadlines and budget without any accident.
- A true logistical feat was the replacement of the regenerator of the FCC plant: temporary drive-over bridges, demolition of the entire regenerator periphery, five heavy lifts in narrow conditions.
- Modular pre-dressing of the vacuum column in three segments as well as of the stair tower with precisely planned dismantling and installation sequences to meet the stipulated shutdown time.



... Thanks go out to all colleagues who paved the way for this success, also to the colleagues of the partner companies who day by day kept working hard, with iron determination, disciplined and with a due portion of fun in all weathers for and with PCK in the four weeks of PCK-TÜV's "kleiner". It was a delight to work with service providers who are the best. ...

Josef Maily, PCK CEO

Thomas Schulze, Shutdown Manager "kleiner" in special edition of Märkische Oderzeitung



# EXPERIENCE FROM OVER 50 LARGE-SIZE REVAMPS

EDL – the revamp specialist

**With over 50 completed large-size projects across Europe we are specialists for revamps in refineries.**

The complex conversions of plants and plant units within short shutdown periods do not only require a wealth of experience at the site but also a very thorough preparation.

With profound expertise and long years' experience in revamps during TAR/T&I we ensure the adherence to tightest deadlines. We serve our customers in all technical issues throughout the entire lifecycle of the project – competently and with a sense of proportion:

- Tailor-made process-related solutions to upgrade existing plants
- Active implementation of innovative technologies and new technical solutions
- Competent and efficient project and site management
- Preparation and implementation of the most advanced safety-related and environmentally compatible plant concepts
- Execution of revamp measures during extremely short shutdown periods
- Precise planning of dismantling and installation activities as well as preparation of detailed logistics concepts for the transport of special equipment.

## Benefits for our customers:

- Maximization of plant efficiency with minimum revamp costs and shortest shutdown periods
- Higher product yields
- Improved product qualities
- Greater operational safety
- Optimization of operating costs
- Minimization of energy consumption
- Increase of environmental compatibility



**The implementation of modernization projects gives customers a long-term added value because it gets easier to meet market requirements and competitiveness can be increased.**

Daniel Oryan, Managing Director



### METHYL CELLULOSE PLANT

**Customer:** DOW Deutschland Anlagenbaugesellschaft mbH

**Location:** Bomlitz/Bitterfeld, Germany

**Project:** Plant extension to increase the production capacity of methyl cellulose at Bitterfeld and increase the blending and loading capacities in Bomlitz



We engineer and build industrial plants and units reliably, safely and sustainably as well.

Thomas Wendt, Head of Quality/HSE Management



## QUALITY CREATES CONFIDENCE

**Outstanding quality and quality assurance are our aspiration. It applies to each individual member of staff – every day.**

Our quality policy is aimed at meeting the requirements of our customers and our own strict standards especially when it comes to costs and deadlines. This aim is achieved by a stringent system of quality assurance in all phases of project execution.

Safety, health and environmental protection are central elements of our corporate activities and a major

prerequisite for the high quality of our services and our business success. For all activities and work processes we follow an efficient HSE management system and are guided by the following principle: Life and health of humans are what counts.



## AROMATICS EXTRACTION

**Customer:** PCK Raffinerie GmbH

**Location:** Schwedt, Germany

- Project:**
- Modification of the existing Arosolvan plant
  - Replacement of N-methyl-2-pyrrolidone (NMP) by the less toxic solvent tetraethylene glycol (TTEG)
  - Minimization of energy and utilities consumption





# PROFESSIONAL PROJECT EXECUTION

The needs of our customers are always in the focus of our work.

**Permanent orientation to our customers' requirements plays a major part in our daily activities.**

It also means transparency in project execution because mutual trust is the basis of a successful partnership. At the same time our customers are involved in all major decisions.

**Our customer-oriented execution concept is characterized by:**

- Transparency and communication across all levels – from the executive level via specialized departments through to the specialist engineer
- Project manager acts as one face to the customer, with full responsibility for cost, schedule and quality
- Efficient management of interfaces
- High degree of network integration using most advanced software.



**It is the close cooperation of all parties involved in the project that supports the solution-finding process and leads to optimal projects for the customer.**

Daniel Oryan, Managing Director



**PÖRNER GRUPPE**

**TECHNOLOGY**

**ENGINEERING**

**CONTRACTING**

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